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The varied group of ailments which receive the indiscriminating title of "lumbago" do not in the majority of cases come under the notice of the consultant or hospital physician, but they are very common in general practice and are responsible for considerable disability and much loss of working time. A rapid appreciation of the true diagnosis in this simple, common and disabling disorder and the immediate institution of the appropriate treatment will considerably shorten the time spent away from work. Nothing could be more unwise than the tendency - still too common in the profession - to lump all cases of acute lumbago into one category and to treat them all on conservative lines. Many cases, perhaps a majority, need and are benefited by rest in bed and simple sedative measures, but on the other hand very many others need much more active treatment - some indeed requiring manipulations of a specialised kind.

This paper is an attempt to differentiate between the commoner conditions which may give rise to an acute lumbago - a term which means little more than 'pain in the back' - and of the principles underlying their treatment. No attempt will be made at a differential diagnosis of all the causes of lumbar pain: the scope of the paper is restricted to cases of



acute pain and discomfort associated with stiffness and limitation of low-back movements.

The first part of this paper deals with some anatomical features of importance in a consideration of backache and its possible causes. Then follows physiological and pathological factors discussed almost wholly from the viewpoint of fibrositis. At the end of this section is a classification of the types of lumbar fibrositis and the pathological changes found in each variety. Lumbar fibrositis is considered in detail and considerable emphasis is laid on the value of manipulative treatment for suitable cases. A series of cases, so treated, is described later in the paper and an attempt made to explain the rationale of this treatment and the indications for its use. Conservative treatment is detailed and old fashioned remedies mentioned. Emphasis is laid in a later chapter on the prophylaxis of backache, and here postural and occupational stresses come under review. These factors are considered of the utmost importance.

Sacro-iliac strains are very common and still very inadequately treated by the profession, largely owing to their being too readily diagnosed as lumbagos or sciaticas. Considerable space is devoted, therefore, to the diagnosis of this condition. Only the principles of treatment are considered.

Displacement of the nucleus pulposus is considered briefly under the diagnosis of local causes of acute lumbago. Extrinsic causes of acute backache require brief notice, and the rarer local causes of pain are enumerated. The value of correct diagnosis is stressed in all cases and whenever manipulation is undertaken diagnosis must be supplemented by the knowledge that no contra-indicative factors are present. Radiology is a necessary method in eliminating these factors. In a short conclusion emphasis is laid on the salient features determining correct diagnosis and treatment of "acute lumbago".

## CHAPTER 2.

### Anatomical, Physiological and Pathological Aspects of Lumbar Backache.

#### Anatomical considerations.

No attempt will be made at a detailed anatomy of the lumbar region: attention will be directed to anatomical features specially bearing on the production of low backache.

The skeletal foundation ~~for~~<sup>of</sup> the lower portion of the back consists of the posterior part of the pelvis with its articulations with the lumbar spine above and the femora below.

### Joints. Intervertebral joints.

The Amphiarthrodial joints between the vertebral bodies consist of the intervertebral fibro-cartilages which are adherent to thin layers of hyaline cartilage covering the upper and lower surfaces of the vertebral bodies. The fibro-cartilages themselves are composed at their circumference of laminae of fibrous tissue and fibro-cartilage forming the annulus fibrosus. At its centre is the nucleus pulposus, a highly elastic substance - soft and pulpy in consistence. The strong anterior and posterior longitudinal ligaments extend up and down in the respective aspects of the bodies, adding great strength to the spine. The articulations of the vertebral arches and their ligaments - ligamenta flava, supraspinal, interspinal, and intertransverse call for no special note.

### Movements of the vertebral joints.

In the lumbar region movements of flexion, extension and lateral movement take place at each joint - small in themselves, considerable as a whole. Mennell has shown radiographically that a considerable degree of flexion and extension takes place at the lumbo-sacral joint. Normally, in the sitting posture, the act of bending forwards should completely obliterate the physiological lumbar curve.

Variations in the curvature and degree of movement in this area are seen in a large variety of conditions and are all of great significance in both diagnosis and treatment. The relatively large range of movement at the lumbo-sacral joint suggests that sudden excessive movements of flexion or extension, or lateral movement may produce strains and injuries there. Severe injuries can be demonstrated radiologically, e.g. locking; but lesser injury (i.e. without bony displacement) remains conjectural although probable. The fact that severe injury to the intervertebral fibro-cartilages not infrequently results with protrusion of the nucleus pulposus into the spinal canal (where it sometimes compresses the spinal cord or the nerve roots) again strongly indicates that minor degrees of strain of these cartilages may occasionally take place. Strains of the vertical spinal ligaments will occur in severe injuries, when their presence is usually of secondary importance.

#### The Sacro-iliac joints.

The articular cartilages are to a variable extent (more so in advanced life) separated by a space containing a synovia-like fluid and hence part of the joint presents the characteristics of a diarthrosis. Until recently it was not considered that any appreciable move-

ment took place at this joint, and even now our evidence of movement is indirect. There is little doubt, however, that a slight 'sliding' movement does take place as the result of rotatory movements - clockwise or anticlockwise - of the ilium on the sacrum. Mennell has accepted an originally osteopathic conception of these movements. When a thigh is flexed with the knee extended, the pull of the hamstrings tends to rotate the ilium backwards at the sacro-iliac joint (thus exerting what Mennell terms a backward torsion strain). On the other hand, when a thigh is extended with the knee flexed the rectus muscle tends to rotate the ilium forwards in a clockwise direction (when viewed from the side) - the so-called forward torsion strain. The Y-shaped ligament exerts a similar pull when the same movement is carried out.

#### Radiology.

A characteristic of acutely painful strains of the sacro-iliac joints is the trivial amount or absence of actual spatial displacement, skiagrams seldom showing any joint abnormality. In recurrent strains, however, there is frequently to be observed a widening of the joint line. When arthritic changes supervene diffuse bony absorption may sometimes be seen along the joint margins. Lipping of the bony edges is sometimes present in oldstanding arthritic cases. ~~It is~~ Lipping alone is not to be regarded as indicating arthritis as it occasionally is present as a congenital abnormality.

X-ray examination establishes the existence of such abnormalities as (1) Sacralisation of the 5th.lumbar vertebra, (2) Lumbarisation of the 1st.sacral vertebra, (3) Abnormally large transverse processes of the 5th.lumbar vertebra. Persons with these abnormalities are undoubtedly more prone to develop 'low-back pain' as the result of injury. Radiology is essential in all doubtful cases in that such pathological conditions as tuberculous disease of bone, osteomyelitis, carcinomatous metastases in bone, are at once recognised and immediately put out of court such calamitous procedures as manipulation.

#### Muscles and Fascia.

The sacro-spinalis is at its origin chiefly tendinous in structure. It arises from the anterior surface of a broad and thick tendon, which is attached to the middle sacral crests, to the spinous processes of the lumbar and the eleventh and twelfth thoracic vertebrae, to the supraspinal ligament, to the posterior part of the iliac crest and to the lateral crest of the sacrum, where it blends with the sacro-tuberus and posterior sacro-iliac ligaments. The main muscle mass divides in the upper lumbar region into three columns which by many heads are inserted into vertebrae - thoracic and cervical - and the sides of the ribs. The muscle is covered by the posterior layer of the lumbo-dorsal fascia which laterally gives origin to a part of Latissimus Dorsi. This fascia is firmly attached to the



crest of the ilium. The muscles of the gluteal region are covered by a much thinner fascia than the lumbo-dorsal.

These fasciae are very frequently the seat of fibrositic changes, which also occur - especially in stout persons - in the subcutaneous tissues superficial to them.

#### The Ilio-Tibial Band.

This is a specially strong part of the deep fascia of the thigh (fascialata) which, superiorly, encloses the Tensor Fasciae Latae muscle, the outer layer being attached to the front part of the iliac crest, and the strong band-like lower portion (which can be felt running down the lateral aspect of the thigh) being attached to the lateral condyle of the tibia. It is often the seat of fibrositic nodules and the contraction which may follow fibrositis is considered by some authorities to upset the dynamics of the pelvis and the sacro-iliac joints in particular. For these reasons it is sometimes stretched or divided.

From the anatomical standpoint the lower portion of the back must always be considered in relation to the skeleton as a whole. Postural abnormalities present in the lumbar regions and causing pain there may be due to lesions in the feet and legs, and these should always be closely examined. The altered gait produced by a painful plantar wart may sometimes throw an unexpected stress on the hip or



sacro-iliac joint above. This is but one example from many to illustrate how an obscure cause may produce effects at a distance.

### Physiology of active muscle and connective tissue.

The changes which take place in muscle and connective tissue during exertion, the means by which a return to resting conditions is secured, and the effect different external factors (such as cold) have on these processes are important if the treatment and prevention of myalgic and fibrositic conditions are to be successful. A comparison of these changes with the pathology of established fibrositis is also helpful.

\* "Tissue Activity. During activity, tissue fluid is formed in considerable amounts."

"In resting muscle, the amount of tissue fluid formed is quite insignificant. In active muscle the exudate may amount to 2 c.c. per minute per 100 grams of organ. As a result of prolonged activity the muscle may be 20% heavier than normal. This increase in weight is accompanied by a lowering of the specific gravity, so that it is due to the excess of fluid which is still retained in the tissue spaces. To the naked eye there

is obvious oedema of the muscle, which is shorter, of greater girth and stiffer. This state of the muscle may in part be responsible for the subjective feeling of stiffness which may persist for so long after severe exertion."

Three physical factors are concerned in this process:-

(1) It is considered that many large molecules break down into small molecules, and these 'metabolites' pass into the tissue spaces where they raise the osmotic pressure locally and so attract fluid from the blood and retain it.

(2) During activity the capillaries in muscle are increased 8-fold in number and are widely dilated. Along with the vastly increased blood flow there is probably an increased permeability of the capillary wall.

(3) Blood pressure is transmitted more directly to the capillaries whose pressure rises. In them the blood pressure may exceed the protein osmotic pressure and lead to a continuous outward flow of fluid.

#### Removal of tissue fluid.

At rest the metabolites diffuse back again into the blood or are oxidised and thus the osmotic pressure of the tissue spaces falls. The arterioles and capillaries become narrowed again. The excess fluid in tissue spaces is absorbed mainly into the blood vessels and possibly into the lymphatics. As the lymphatics are probably a closed system of channels no fluid can

enter them directly but must first pass through the endothelial lining.

### Influence of temperature.

If muscle activity is taking place when the temperature is raised the increased capillary wall permeability may be still further increased by the greater heat produced locally.

Cold. Local chilling of the skin is a factor of the greatest importance in precipitating attacks of acute myalgia or fibrositis. The lowering of skin temperature may be produced in various ways:

- (i) directly by exposure to draughts
- (ii) as the result of the evaporation of perspiration
- (iii) sudden falls in the external temperature.

The cold produces a vasoconstriction of the capillaries and arterioles of the resting muscle and connective tissues before those tissues have been able to remove the tissue fluid normally produced during activity. The muscles of the trained athlete and worker will normally return to their resting condition more quickly and withstand unfavourable external influences better than the out-of-condition person not only because their movements are better co-ordinated, more used to the needs of a quick increase and quick decrease of activity, but because their

circulation speed is quicker and the respiratory exchange of gases in the lungs more active. Metabolic changes are more active and detoxicating powers greater in the trained man.

#### Histology of myalgia and fibrositis.

\* "The nodules of fibrositis, if excised in an acute attack usually present no recognisable form under the microscope. They appear to represent a physical rather than a morphological change in the connective tissue cells. Some chemical process, possibly brought about by an accumulation of sacrolactic acid, converts a tissue fluid to a gel. The process is reversible, for the nodules disappear on subjection to massage or prolonged heat (and to manipulation in some cases).

In chronic cases these nodules persist and attain an individual morphology of fibrous tissue and round cells. In persistent cases there may be a good deal of perivascular fibrosis which has given rise to lymphatic obstruction. This would presumably tend to favour the accumulation of metabolites in the muscles and thus an extension of the disease.

\* A.A.Douthwaite. Lumbago. Medical Annual, 1937, p.273-278.

A.A.Douthwaite. Rheumatic Disorders, Chronic. Med. Annual, 1938, p.422-428.

\* W.J.C.Copeman. J.A.M.A. 1936, Oct.17, p.1295.

In some cases of chronic lumbago there is persistent restriction of spinal movement, due in all probability to the presence of limiting adhesions between muscles, fasciae and vertebrae."

This condition must be differentiated from osteoarthritis of the spine.

In the gouty biurate deposits are sometimes found in the muscles. A raised blood-uric acid should suggest the possibility of the gouty diathesis.

There is reason to believe an intermediate stage exists between the physiological state of increased size and oedema of muscle (mostly extra-cellular in the interfascicular connective tissues) which is present during activity and the later state of affairs (in fibrositis) when definite nodules can be felt by the examiner. Transient muscular stiffness after exercise may be regarded as its mildest manifestation. Could we examine such muscles what would we be likely to find? In all probability the persistence - during rest - of the physiological conditions found during activity, i.e. increased size of muscle due to an excess of tissue fluids in the tissue spaces. Any undue continuance of this state would entail a continuance of deficient oxygenation of the tissues and a consequent accumulation of sarco-lactic acid.



Pathology of different types of Acute Lumbago.

A. Acute Diffuse Lumbar Fibrositis.

This clumsy term is used to describe the intermediate condition which exists between the physiological state of increased size and oedema of muscle and tissue (produced by exertion) and the definite precipitation of fibrositic nodules. The justification for its use is the clinical fact that treatment is greatly influenced by the presence or absence of nodules. Pathologically this group would correspond to Douthwaite's concept of a stage where a gel-like substance is present diffusely in the affected region.

B. Chronic Lumbar Fibrositis with acute exacerbation.

(a) with nodules.

Fibrositic nodules - already described from the histological standpoint - are present and may be associated with other manifestations of chronicity, e.g. adhesions between the deeper structures and tissues.

(b) without nodules.

No definite nodules are present but diffuse fibrositic changes (adhesions and fibrous thickenings between muscles, bones, ligaments and in the neighbourhood of joints) are present.

The justification for this group is again largely clinical.

C. Acute Traumatic Lumbago. (Acute lumbar back strain, sacro-spinalis strain).

In the simplest type of case seen there is a localised injury to the sacro-spinalis muscle producing traumatic effusion with ~~subsequent~~ <sup>occasional</sup> pigmentary discolouration of the overlying skin. It is essentially a simple muscle strain. Occasionally a haematoma may be formed in deeper injuries.

Other injuries which may reasonably be included in this group are tears of the fascial attachments to their bony origins. (A presumptive diagnosis unlikely to be readily substantiated). Occasionally severe strains of the softer tissues may be accompanied by a detachment of the tip of a transverse process.

Some authorities are very sceptical as to the frequent occurrence of muscle injury in this region and regard most cases so labelled as due to injuries to neighbouring structures - joints and ligaments in particular.



## CHAPTER 3.

Diagnosis.(1) Exclusion of extrinsic causes of acute low-backache.

In a severe case of acute "lumbago" due to whatever cause there is seldom any difficulty in excluding extrinsic conditions. Difficulties may arise in cases of gradual onset or where the pain is subacute or intermittent in character.

(a) Febrile conditions.

Backache of varying severity is a common accompaniment of various fevers, particularly influenza, tonsillitis, smallpox, enteric and apical dental abscess. It is rarely accompanied by marked stiffness and limitation of movement. The precaution of observing the temperature is therefore not to be despised and may prevent a serious mistake; as backache due to a local cause is rarely associated with a rise of temperature.

(b) Referred pain from pelvic disease.

Haemorrhoids, ischio-rectal abscess, carcinoma of the prostate, rectum, colon, and uterus are examples of common pelvic conditions which may cause low backache, nearly always of a subacute character, but occasionally subject to exacerbation. Only where the primary condition is unknown is difficulty in diagnosis likely. Gynaecological opinion is still

undecided as to whether uterine malposition (retroversion and retroflexion in particular) and cervical infection do in fact cause the backache which is so often found in association with them. Conservative opinion has always supported this view, more especially in regard to cervicitis; but diagnosis must be guarded in those cases where a neurotic tendency is present or where there is reason to suspect the presence of sexual disharmony between husband and wife. These factors alone may cause intractable backache. The pain in the gynaecological cases is usually subacute and not accompanied by stiffness and limitation of movement. There seems adequate reason to affirm that Radium treatment for intrapelvic conditions (especially in women) is occasionally followed by troublesome low backache of a peculiarly intractable character. The reason for this is quite obscure, and indeed by many it is confidently ascribed to neurosis. Mennell would perhaps find some of these cases to be due to unrecognised flat-back strain acquired at the time of the operation and due to the back being inadequately supported on the operation table. Impacted fibroid tumours and an impacted pregnant uterus may cause acute backache. Intrapelvic sepsis, especially posterior parametritis, is usually associated with backache. Following labour and accompanied by pyrexia it does not cause confusion.

(c) Intra-abdominal disease.

The following renal conditions need mention: pyelitis ( and urinary tract infection), calculus, tumour, inflammations, abnormal mobility.

Cancer of the pancreas, duodenal ulcer, cancer of the stomach, aortic aneurysm, and other rarer conditions need consideration when other signs and symptoms suggest them.

Simple constipation may be responsible for diffuse slight backache.

(d) Neurological conditions.

Tumours of the cauda equina and disseminated sclerosis frequently begin with backache before other signs are present. In practically none of the abdominal and nervous disorders enumerated above does an acutely painful condition suddenly arise accompanied by a forced immobility of the patient. The signs they present are more likely to be confused with the chronic and slighter backaches of local origin.

(e) Post-operative backache.

Following operation flat-back strain may develop (Mennell) and lead to troublesome backache. It is readily recognised if its presence has been suspected and looked for.

It tends to occur in prolonged operations under deep anaesthesia when the lumbar curve has been left unsupported. The weight of the body stretches the spinal ligaments and produces an obliteration of the normal lumbar curve. The lumbar concavity should always be supported by a suitable pillow or sandbag during any abdominal operation.

- (6) Acute Traumatic Lumbargia. Acute Spinal Pain which is Sacro-spiralis.
- (7) Acute Sacro-Iliac Strain. In fact an extension of acute attack.
- (8) Acute Pseudo-Rheumatoid Strain.
- (9) Deviations of the Intervertebral Joints (Ankylosis, Talipes).
- (10) Thickened Ligaments Flav.
- (11) Spasmodic Paralysis.
- (12) Acute Exacerbation of local bone disease.

Classification of the chief local causes of  
acute pain, stiffness and enforced immobility  
of the lumbo-sacral regions.

- (A) Acute Diffuse Lumbar Fibrositis (synonym - acute myalgia).
- (B) Chronic Lumbar Fibrositis with acute exacerbation -
  - (a) with nodules,
  - (b) without nodules.
- (C) Acute Traumatic Lumbago. (Acute Lumbar back strain  
or Sacro-spinalis strain).
- (D) Acute Sacro-Iliac Strain - initial or recurrent  
acute attack.
- (E) Acute Lumbo-Sacral Strain.
- (F) Lesions of the Intervertebral discs (Nucleus  
Pulposus).
- (G) Thickened Ligamenta Flava.
- (H) Spondylolisthesis.
- (I) Acute Exacerbation of local bone disease.

(c) Physical signs of the chief local causes of acute pain.

Clinical Description of an attack of "acute lumbago"

(or of a "simple" lumbago).

Typically, in a person whose general health is unaffected, an acute attack of pain is experienced across the small of the back or lower down, and the patient is unable to stand erect. Any attempt to straighten the back produces a severe piercing pain. The onset is often extremely sudden, justifying the name sometimes applied to it in Germany - der Hexenschutz, the witches' shot! A frequent history is that the patient awoke with the attack, crying out with pain on endeavouring to get out of bed.

"Turning movements in bed are not excruciatingly painful unless an effort be made to lie face downwards. This posture tends to extend the lumbar spine and thus provokes a spasm of agony which can be promptly relieved by tucking a pillow under the abdomen. The pain may be felt more on one side than another, or it may be quite diffuse. It is usually at its maximum slightly above the level of the posterior superior iliac spines, but may occur as high as the lower dorsal region. If it occurs in the lower lumbar region it may radiate into both buttocks and posterior aspects of the thighs. If in the dorsal region it commonly passes intermittently and with extreme severity around the trunk, which it holds in a vice-like grasp".



The patient with acute lumbago walks with short steps, the body bent from the hip, the affected region being kept as rigid as possible, and supports himself with a stick or by holding on to the furniture. Sudden movements are dreaded. Sitting down in a chair is a slow and careful operation but relatively painless compared with getting up again. The sufferer from acute lumbago indeed often discovers its presence on attempting to rise from a chair to which he had betaken himself after an unwitting exposure to some causal factor, e.g. after gardening in the evening, or after sitting on a cold surface. Attacks which occur in persons with chronic fibrositis of the back may develop suddenly, but are more usually of gradual onset. Acute attacks usually attain their maximum severity immediately, or shortly after the onset. Defaecation is painful and constipation is likely to develop because the patient dreads the muscular efforts needed for evacuation. The pain of a developed attack is always worse after a spell of immobility or rest.

Posture and gait. Standing, rigidity of the bent back is the most striking feature - the body being bent forward at the hip-joint - free movement of the thighs being impeded. There is no free swing of the legs. Usually there is hyperextension of the cervical region, and spasmodic efforts are made to straighten



the back. All the lower spinal movements are restricted and painful. In bending to touch the toes the lumbar spine moves all in one piece, its movement is limited and efforts to move it further cause distress.

The description in the preceding three pages is one that applies in a general way to all cases due to fibrositis, chill or exposure, to many due to trauma to muscle, to some cases of sacro-iliac strain, and to a few of the rarer causes. That is to say, the clinical picture is descriptive of the general entity variously termed 'acute lumbago', 'lumbago', or 'acute low back pain', but does not enable us to diagnose the particular cause.

The special signs and symptoms distinguishing each cause will now be described in detail.

#### A. Acute Diffuse Lumbar Fibrositis (? synonym, acute myalgia).

The general picture is as described above. The pain is always bilateral, palpation of the prone patient reveals no fibrositic nodules and no local areas of tenderness. Firm pressure of such a nature as to stretch the muscles and their fibrous coverings will sometimes elicit a little pain, but the chief point of the examination is the negative character of palpation. Practically all cases of acutely painful bilateral lumbago of sudden onset, which present no abnormalities or pain to the palpating hand,

fall into this category. Examination of the joints, bones, and sciatic nerve is negative and all extrinsic causes have been excluded.

All first attacks due to 'fibrositis' are of this nature, as are similar attacks precipitated by chill, fatigue, exposure and dietetic excess (e.g. gouty types of lumbago). The term 'acute myalgia' is probably more applicable to many of these cases in their initial attacks, but the author believes that almost all of them (if they recur) will eventually present fibrositic deposits and tender areas. In arbitrarily using the term 'diffuse fibrositis', too, the mind of the examiner is insensibly drawn to consider all the general factors of causation, such as metabolic dyscrasia, focal infection, dietetic maladjustment and postural defects which may contribute to the appearance of lumbago, and is not so likely to consider his task of treatment at an end when the immediate disability subsides.

The important diagnostic point in the history is that when an acute bilateral lumbago develops, especially in anyone under the age of 50, without any premonitory discomfort of several days' duration the lumbago is probably of the type under discussion. There is usually no history of trauma, although per contra strain or prolonged exertion is often a precipitating factor.

B. Chronic Lumbar Fibrositis with acute exacerbation -

(a) with nodules

(b) without nodules.

(a) Physical signs are those of acute diffuse lumbar fibrositis (A) with the addition that nodules are present. These tend to occur in special areas which should always be carefully palpated with the flat of the hand and fingers and gently pressed when pain is always elicited. When small they may feel like millet seeds, or be so large as to resemble strands of fine string.

The common sites for these fibrositic deposits are: (1) the gluteal (lateral) aspect of the posterior superior iliac spine; (2) deep in the gluteal muscles (medius) about two-fingers' breadth below the iliac crest; (3) on the lateral aspect of the iliac crest; (4) opposite the transverse process of the 1st. lumbar vertebra, and in the neighbourhood of the angle formed by the sacro-spinalis and the 12th.rib one or more may be found. When there is much fibrositis deposits may be present in considerable numbers throughout the lumbar and gluteal regions.

It is always wise to test for the presence of nodules in the ilio-tibial band, in the proximity of the sciatic nerve, in the shoulder region, and at the base of the skull and neck. When nodules are very small or infrequent in the back, their recognition elsewhere is useful in establishing a diagnosis.

Clinically these cases usually have a subacute onset and are in general better treated by conservative measures. In some cases, however, with few deposits and those all in the lumbo-dorsal fascia above the iliac crests manipulative measures may be tried.

(b) Chronic Lumbar Fibrositis without Nodules.

This group contains cases termed chronic because lumbago has previously occurred, usually acutely, on one or more occasions; who present the general picture of bilateral lumbago but, on examination, show no nodules or localised pain (at rest, of course). Recurrent lumbagos due to chill, exposure or some dietetic idiosyncrasy usually fall into this group. Active manipulative treatment is the treatment of choice.

C. Acute Traumatic Lumbago (Acute lumbar back strain, sacro-spinalis strain).

Frankly this is a purely artificial grouping of traumatic cases which, as far as our knowledge goes at present, are not due to any injury to bones or joints (including ligaments). It includes all types of acute pain due to injury of the soft tissues of the back. Two such cases are described in the text. Great care must be exercised in excluding joint

injuries because painful muscle spasm is a common natural phenomenon designed to immobilise the affected joint.

In all these cases one-sided acute lumbago is complained of following some trauma, and on examination a localised area of intense tenderness to palpation is found in the sacro-spinalis muscle or the aponeurosis superficial to it.

\* "There is only one sure way of discovering if a definite lesion is present in the muscle, and that is to provide rest and sedative treatment till the spasm has subsided, and then to examine the individual muscles with faradism. If contraction in response to the electric current causes definite and localised pain in the muscle, then we know that the muscle is at fault."

Injuries to the aponeurosis are not uncommon; more common, probably, than muscle injury (considered rare by Mennell). Such injuries are often found at the fibrous attachments to the ilium and sacrum. Without faradism it is probably true to say that the differentiation between muscle injury and fascial injury is often impossible. Massive bruising and haematomata sometimes form as the result of direct violence.

\* J.B.Mennell. Backache and Lumbago. British Encyclopaedia of Medical Practice, Vol.2, page 276.



Diagnosis.      (D) Sacro-iliac strain.

This is now recognised to be a far from uncommon injury.

An acute strain whether of the forward or backward torsion variety produces a clinical picture bearing a superficial resemblance to a simple fibrositic lumbago, and very liable to be confused with it if, for example, the patient is seen for the first time hunched up in bed enduring severe pain, and the examiner forbears - from a mistaken kindness - to make anything more than a cursory examination. The patient may be seen for the first time fully clothed, and again the similarities in posture, appearance and acute onset lead to a presumptive diagnosis of "acute lumbago", and in all probability the application of sedative treatment. A detailed history of the first and any subsequent attacks will often indicate to the examiner the possibility of the presence of a sacro-iliac strain. In a large percentage of these cases such a distinctive history is elicited that a confident diagnosis may be made on it alone.

History of first attack.

The first injury or strain to this joint is usually the result of a so-called torsion strain. In a young adult of fair physique with no low-back abnormalities (e.g. sacralised fifth lumbar vertebra or abnormal transverse processes) the initial trauma is nearly always a severe one, but in women of poor physique or in those with postural or skeletal abnormalities

the primary accident may be quite trivial. In many of these cases, however, where a severe disability has resulted from a slight fall or slip a careful history of the preceding six months or year (even longer occasionally) will reveal an antecedent accident of some gravity, such as a fall from a horse, from which a quick recovery was made without any apparent permanent ill effects. It is reasonable to suppose that in these cases the first and more severe injury was the causa causans and the second and more trivial strain precipitated the sacro-iliac strain. In cases where local abnormalities are present slight twisting accidents may precipitate a strain.

The onset is usually abrupt, but pain is often maximal hours or days after the commencement, though acute enough then to equal most simple acute lumbagos. The patient often has a feeling that "something is out of place" - a valuable statement if not made after a visit to an osteopath! Examples of such strains are:- (1) that experienced by a coal-man who, when taking a sack of coals from a cart receives the weight of the sack suddenly upon his back before he is braced to receive it: (2) the sudden interruption of the act of lifting a heavy box, owing to a loose strap suddenly catching: (3) the pulling out of the bottom drawer of a chest of drawers which suddenly jams. Indeed, sudden falls and twists in any direction may lay an unexpectedly



heavy tension on this joint and strain it. Occasionally the joint is strained by an almost trivial mechanical stress, e.g. a man sitting in an arm chair turned round to reach for his pipe and succeeded in locking his right sacro-iliac joint and (2) a woman reached up to detach a dress from a hook on the wall and produced an agonisingly acute strain of a sacro-iliac joint which had to be manipulated. As previously noted, one assumes that in these cases an unnoticed and symptomless strain of the sacro-iliac joint took place in the past. Once the joint has been strained subsequent attacks may be produced by very simple movements, such as a slip on bath mat, sneezing or coughing, turning round or stretching upwards.

#### Examination.      Physical signs.

For the clear demonstration of the physical signs of this condition we are principally indebted to the work of Mennell whose "Backache" may be considered the standard authority on sacro-iliac strain. When sitting the patient supports the weight of the body on the ischial tuberosity of the uninjured side, and on the leg of the same side when standing. Stooping (flexion at the hips) is much more restricted in the standing than in the sitting posture. Inspection of the back often shows a lumbar scoliosis with its concavity towards the injured side.

Prominence of the injured joint posteriorly or alteration of the elevation and anterior position of the anterior superior iliac spines and iliac crests should be looked for but is not always present. Abdominal palpation may reveal tenderness over Baer's sacro-iliac point (2 inches from the umbilicus towards the anterior superior iliac spine). Posteriorly tenderness is found on palpation immediately medial to the posterior spine, over the strong posterior ligaments of the joint. The exact localisation of pain in this area is very important.

Fibrositic nodules, when present, are found to have a marked tendency to occur in well-defined areas. A common position is immediately lateral to the posterior sacro-iliac spine. Its presence in no way indicates a sacro-iliac lesion although it may of course accompany one. By further palpation the presence or absence of fibrositic nodes elsewhere is investigated and the condition of the sciatic nerve and the ilio-tibial band determined.

#### Movements.

It is principally on a careful appraisal of the result of the various movement tests that a confident diagnosis of a sacro-iliac strain is made. Unless they support the history such a diagnosis cannot be entertained.

It is not proposed to repeat here the many movements admirably described by Mennell. In effect they are a series of

simple manipulations laying strains (mostly indirect) of a forward and backward torsion on the joint, care being exercised in the technique of application and deduction to exclude effects and affects from other joints. At the end of the examination of a straightforward case it should be possible to say that a certain number of movements producing a forward (or backward) torsion strain of the joint in question increase the pain the patient experiences, and that movements producing opposite effects are either painless or even appear to ease the pain. The conclusion will be that if forward torsion movements (or vice versa) increase the pain they do so because a forward torsion strain is already present. Such a case *carteribus paribus* calls for manipulative measures in the opposite direction (i.e. a backward torsion strain or strains must be employed). Unfortunately a large number of cases are not of this simple nature and the signs may be equivocal or misleading. Cases of long standing, cases of very severe initial violence, cases where too vigorous or faulty manipulative treatment has taken place may show signs of both forward and backward strain. Repeated traumata have produced an unstable joint, whose condition would only be worsened by manipulative treatment. The same type of case may develop arthritic changes - a factor that completely alters the position.

In many cases after the routine tests have been performed it is found that one, two, or more of the results of the minor tests contradict the majority of the test results. In this position a careful appraisal of the results of all the tests must be made before a decision as to the type of strain present is made. This discrimination is of vital importance if manipulation is required. Mennell pointed out that although a strain be present only some of the movements increasing it may produce pain. This variability is dependent on the fact that many of the tests impose mechanical tensions acting indirectly and at a distance and influenced by muscles, joints and ligaments in very variable conditions of health and tonicity. This far from mathematical certainty in the signs of so many of the difficult cases probably accounts for the fact that sacro-iliac joint strain was for so long regarded by our profession as a myth of the unorthodox practitioner's making. In many cases some pain is produced by movements of one character, but the still greater pain produced in the reverse direction leads to a confident diagnosis. Difficulty arises where the patient is in such severe pain that no complete examination is possible. The history of such cases is usually very suggestive of the diagnosis. Inspection, careful palpation, and a gentle trial of the two most important torsion tests, together with the history, is usually enough to make a decision.

Diagnosis.

(1) The history of the initial strain is usually distinctive and contrasts sharply with the (usual) story of the lumbago due to a fibrositis or chill.

(2) When first seen after an acute strain the patient commonly describes his disability in a specially characteristic manner.

(3) The pain is practically always unilateral and the posterior aspect of the sacro-iliac joint is nearly always indicated as the seat of maximum pain. Difficult cases are those with a wider diffusion of pain, and those with a superadded fibrositis; or the beginnings of "sciatic" pain down the leg.

(4) Physical signs as described.

The progress of a case of sacro-iliac strain which has not been manipulated and is being treated by rest in bed on the lines of a 'simple' lumbago is often instructive if the diagnosis has been missed. For example, the backache and limitation of movement may unaccountably improve considerably in the course of half an hour and then, perhaps, next day when everything is set fair, the pain suddenly returns as badly as ever. When questioned the patient will deny having exerted himself unduly but will say that the pain followed his turning over in bed or reaching for a book or returning from the lavatory. This type of history occurs in other conditions also to a lesser degree.



Relationship between sacro-iliac traumata and 'simple'  
cases of acute lumbago.

A case is described in which the signs and symptoms indicated an acute diffuse lumbar fibrositis, but the development of the case clearly revealed a sacro-iliac joint strain as being the essential clinical condition present. This case with its gross manifestations of sacro-iliac strain is held to be a clear example of the ease with which similar and milder strains may be confused with the simple lumbagos.

Another important consideration is the realisation that following a sacro-iliac strain - recognised or not - diffuse fibrositic changes may quickly follow in the immobilised lumbosacral tissues.

Sacro-iliac strains may, of course, occur in patients who are suffering from chronic lumbar fibrositis and the injury may exacerbate the latent condition. All these factors call for care in eliciting a clear history and an equal care in eliminating, on examination, the sacro-iliac joint as the pathological condition. Their distinguishing signs have already been fully described.

It is reasonable to assume that many cases of mild sacro-iliac injury occur without any displacement - even the smallest - but with the production of a traumatic 'exudate' in the joint cartilages. In a certain number of cases this condition will



lead to a protective immobilisation of the lumbo-sacral muscles on both sides. If other factors predisposing to simple fibrositic (and myalgic) lumbago are present in the individual (e.g. sepsis, gouty diathesis, postural disabilities, etc.) a diffuse fibrositis may quickly supervene and mask the essential causa causans. It must always be remembered that, except as the result of severe violence, sacro-iliac injury is commonly predisposed to by skeletal abnormalities in the lumbo-sacral regions (which can only be diagnosed by radiology) postural abnormalities and asymmetries and old injuries (not necessarily to the sacro-iliac joints themselves).

Case. History. Mr.J.T. aet.33. commercial traveller.

Developed acute lumbar pain and stiffness immediately after he had passed the ball during a game of football. cursory examination in the surgery showed that he had a bilateral lumbago without any scoliosis or unilateral signs. There were no fibrositic nodules palpable and no tenderness on examination. He did not improve after a day's rest in bed, and as he was very desirous of getting back to work as soon as possible he agreed to manipulative treatment being undertaken. After a preliminary injection of Dilaudid he was manipulated in the usual manner. The immediate improvement was not as complete as usual and suggested that there was more than a simple fibrositis present.

The following morning the patient awoke feeling much worse, with extreme pain over the posterior aspect of the right sacro-iliac joint. On examination there were definite indications of a sacro-iliac joint strain (forward torsion variety): pain over the posterior joint ligaments, local pain on all passive movements throwing a forward torsion strain on the joint and a lumbar scoliosis with concavity towards the affected side.

It was clear that the initial diagnosis was erroneous, that the essential injury had been a sacro-iliac strain of minor severity and that this condition had been greatly aggravated by manipulation; to such a degree indeed as to produce patent signs of injury. After two days, as no improvement showed itself, the patient was manipulated without an anaesthetic - movements placing backward torsion strains on the joint being utilised. With rest and heat the pain gradually subsided in 4 days and on the following morning the patient woke up without any pain.

The lessons this case teaches are that examination cannot be too careful when manipulation is contemplated, that a mild joint strain (perhaps sprain would be a better word) may produce bilateral backache and stiffness and closely simulate simple fibrositic lumbago. In this particular case the history of the development of the pain is suggestive of a sudden joint strain rather than a diffuse musculo-fascial pathology.

(E) Acute Lumbo-Sacral Strain.

Acute strains of this joint are uncommon and are practically always the result of severe trauma. This joint shares in chronic back strains such as lordosis and flat back strains, but they are not included in a discussion on acute strains beyond the fact that their presence may be a factor in predisposing to acute lumbagos.

Locking.

Acute and sudden pain in or near the joint develops as the result of a trauma producing rotation or backward flexion of the trunk. The patient tends to "remain put" in a position sometimes known as "twisted pelvis" with the lumbar spine arched and rotated to one side. X-rays show a marked scoliosis with maximum angling at the affected joint.

Treatment.

Reduction of the deformity by passive movements under full anaesthesia. Locking of the lumbo-sacral joint is an affair for the orthopaedic surgeon: the question arises, however, whether minor injuries or strains of this joint may not occur more frequently than is usually thought and produce acute low backache, bilateral in extent, and associated with a protective spasm of the lumbar muscles on each side. Such a

condition, if it exists, would simulate what has been arbitrarily termed diffuse fibrositic lumbago (or an acute myalgia).

Occasionally one hears from a patient that an acute lumbago has followed a sudden hyperextension of the back (e.g. as in serving at tennis). If no localising signs are present the doubt will always remain as to whether the excessive extension has strained the lumbar muscles or the lumbo-sacral joint.

#### (F) Lesions of the Intervertebral Discs.

##### (Hernia of the Nucleus Pulposus)

Definition. It is now known that as the result of certain injuries to the spine one intervertebral disc may be damaged in such a manner as to lead to a protrusion of the highly elastic nucleus pulposus into the spinal canal, where it may press on the spinal cord or the nerve roots, and produce pain and disability in the back. In 90% of cases the injured disc lies between the 4th. and 5th. lumbar vertebrae or the 5th. lumbar vertebra and the sacrum.

History. In 80% of cases of this condition there is a history of injury - usually in the act of lifting a heavy weight something is felt to give way (or "to snap") in the lower portion of the back. In nearly all cases this is followed by sciatic pain, and the diagnosis has to be made from other causes of sciatica. Occasionally the condition may, for a time, simulate

an acute lumbago, there being pain and tenderness between the spines of the vertebrae in relation to the injured disc and some bilateral muscular spasm, but sciatic pain soon develops. The normal lumbar lordosis is diminished and there is an inclination of the spine towards the affected side (sciatic scoliosis). Herniation of the nucleus sometimes occurs during the course of inflammatory disease of the vertebrae (e.g. tuberculosis)

Diagnosis. This is a rare but increasingly recognised lesion.

It is seldom that confusion arises with a simple lumbago, the diagnosis being from other causes of sciatica. X-ray examination following the injection of lipiodol intrathecally shows a definite filling defect. There is also a considerable increase in the cerebro-spinal fluid protein content.

Treatment. Operation. Laminectomy and removal of the protruded disc.

#### (G) Thickened Ligamenta Flava.

Definition. A localised thickening of the Ligamenta Flava between two laminae is caused by injuries, such as may injure an intervertebral disc, and produce a clinical condition indistinguishable from herniation of the Nucleus Pulposus, the essential feature of each being pressure on the spinal cord or the spinal nerve foramen. Sometimes indeed the two conditions co-exist.



Treatment. Operative removal of the lamina and dissection of the thickened ligament, especially where it presses upon the intervertebral foramen.

#### (H) Spondylolisthesis.

Definition. In this condition there is a subluxation forwards of the 5th.lumbar vertebra on the sacrum. This is usually due to a developmental defect of the 5th.lumbar vertebra, the lamina of which has failed to unite with the body, so allowing the latter to slip forwards.

Signs and Symptoms. There is usually a history of the gradual development of disability, increasing lordosis and low backache. In a developed case actual deformity of the spine immediately above the spinous process of the 5th.lumbar vertebra may be present. Pain and tenderness are localised and bilateral.

Diagnosis. The rapid development of symptoms in a case without marked deformity may lead to a mistaken diagnosis of a "simple lumbago".

Radiology establishes the diagnosis of this relatively rare condition.

Treatment. Operation. Internal fixation.



(I) Acute exacerbation of local bone disease.

Occasionally pain in the back, which may be associated with some protective muscular spasm, is the first indication of a cancerous metastasis from a silent primary source. Usually, however, the primary disease is known and its spread to vertebrae is not likely to lead to confusion of diagnosis. New growth occasionally begins in the spine. Similarly, such inflammatory conditions as tuberculosis (Pott's disease) or osteo-arthritis of the spine may produce low back pain of some severity at some stage in their development, but they are essentially chronic processes. Radiological examination of the spine is an essential in their diagnosis.

Acute osteomyelitis of the vertebrae most often affects the lumbar region. Marked constitutional symptoms are usually present with little or no local pain and tenderness. In less acute cases severe pain in the back, with rigidity of the spinal muscles and extreme local tenderness with oedema over the affected bones may be present. In the early stages the radiograph may not show any abnormality. Significant changes are found in the cerebro-spinal fluid.

Typhoid Spine. The occurrence of severe pain in the back, situated deeply and accompanied by muscle spasm in a patient recovering from enteric fever suggests the development of a

typhoid osteomyelitis.

### Spinal Deformities.

Kyphosis Dorsalis Juvenilis is a chronic condition which has to be distinguished from tuberculosis. It is a vertebral epiphysitis and usually no symptoms are present until a kyphosis develops. Local pain and tenderness may then be found.

A rare condition - Vertebra Plana (or Calvé's disease of the spine) produces local pain and tenderness and a rapidly developing local kyphosis.

Specific bone diseases usually produce changes in the spinal vertebrae, but they are slow and progressive in character accompanied by increasing spinal deformity, and unlikely at any time to simulate an acute lumbago.

In osteitis deformans (Paget's disease of bone), generalised osteitis fibrosa cystica, osteogenesis imperfecta, rickets, and osteomalacia gross spinal deformities occur but give rise to little local pain of an acute nature.

## CHAPTER 4.

## AETIOLOGY.

Aetiological factors in lumbar fibrositis.

Age and sex. Acute lumbago practically never occurs before 20 and is commonest from 30 to 50. After 40, exacerbations of chronic fibrositic processes are common. The great majority of acute attacks are seen in men.

Exposure to cold. A common factor in very many attacks is the history of chilling of the skin of the back following or accompanying a condition of strain or active use of the spinal muscles.

Examples of this are: (1) sitting in a cramped position on a stone floor repairing a motor car; (2) prolonged sitting in a cramped position exposed to a draught; (3) stokers coming from work in a hot engine room and coming up on to the cool deck; (4) gardening (and perspiring) in the cool of the evening.

In a person prone to lumbago cold alone may produce an attack, e.g. exposure of the back during sleep by the riding up of the pyjama coat.

Climatic changes. Damp, variations in barometric pressure, sudden changes in the temperature are contributing factors in many cases. They often act as variants of the preceding factor - exposure to cold. For example, a sudden rise in temperature may produce perspiration, and the evaporation of sweat from the

skin of the back produces a local lowering of temperature.

Wet clothes probably act in similar fashion.

"Fatigue factor". In attacks of sudden onset it is very usual to find that the patient had for an antecedent period of months or weeks been below par, suffering from tiredness, prolonged overwork, mental worry or anxiety.

Diathesis or Constitutional Factors. Attacks of lumbago are common in the gouty and in them we may suppose the inborn error of metabolism to be important in inducing attacks. Presumably gouty deposits occur in the affected muscles. By many, a "fibrositic diathesis" has been postulated and considered to be either hereditary or acquired, the latter developing as the result of a synthesis of dietetic, endocrine and nervous influences. Thomson and Gordon have emphasised the analogy between the known aetiology of gout and the uncertain beginnings of fibrositis. In some people dietetic indiscretion or the ingestion of a certain article of food (e.g. pork, beef, or shell fish) will produce an attack of lumbago. The hereditary tendency to attacks of muscular rheumatism (or fibrositis) is present in many families.

Focal Sepsis. Although no longer as fashionable as formerly, the rôle of infection must never be forgotten in the young adult. Infected teeth are facile princeps as a source of trouble.

Tonsils, sinuses, antra, gall bladder, prostate (gonorrhoea) and

occasionally the appendix must all be examined. In older patients radical measures should not be undertaken unless the rôle of infection is very definitely established.

Intestinal auto-intoxication. Many cases of fibrositis are benefited by colonic lavage, usually prescribed in arbitrary fashion for a presumed unhealthy lower bowel. The theory remains unproven and in no very high repute. No one disputes the fact that in many cases there exists an uncertain relationship between attacks of acute fibrositis and an altered state of the bowel wall. Some cases of acute lumbago follow a simple acute diarrhoea and the circumstances of these attacks often suggest that the permeability of the mucosa is lowered - abnormal products of protein digestion entering the general circulation and inducing an 'allergic' lumbago.

(b) Chronic strains predisposing to backache.

(a) Occupational. In many manual occupations the back may be bent or in a position of strain for long periods of time. Coal mining and gardening are examples of trades where the back muscles are in frequent hard use, often maintained in bent attitudes in cramped surroundings for hours at a time and exposed - to a far greater extent than in sedentary occupations - to the risk of injury and muscle strain. Yet acute lumbago is not unduly common in the professional gardener and the coal miner. It is, on the



other hand, very common in the amateur gardener, who in the cool of the evening - after a day of sitting in an overheated office - overtaxes his untrained back muscles in a spate of hard digging, weeding or pushing a roller. This question of trained and untrained muscle (in its relation to the development of fibrositis) will be discussed later. It is sufficient to note that whilst some workers are by the nature of their occupations more liable to ligamentous strain and muscle injury, it does not appear that there is any evidence that they are more liable to non-traumatic acute lumbago than workers in other occupations.

(c) Faulty posture in sedentary workers.

A correct and comfortable sitting position is essential to the sedentary worker. Slight variations in position will naturally occur in all workers, but should be supplemented by short periods when the worker should be allowed to get up and walk about. An office stool which is satisfactory for a man of average height may be responsible for the development of low backache in a very tall man who, to get down to his bench or table adopts one or two positions: (i) he tends to straighten his back more than his fellow thus producing a degree of flat back strain, and (ii) he will often work with his legs straight out - a position entailing excessive sacro-iliac strain.

Similarly, the height of the table or bench is important in producing strain.



(b) Unwise or faulty exercises. The prevailing crusade for improved national fitness has one unfortunate result in that it makes many middle-aged people begin exercises and physical jerks of a severe and trying nature for which they are unfitted. The sufferers are usually those who do their exercises at home without supervision. Even the 'daily dozen' toe-touching exercise with the knees straight and stiff lays considerable strain on the sacro-iliac ligaments. Some <sup>causes</sup> of exercise whilst admirable for the young and fit, are decidedly unsuitable for middle-aged or elderly people who attempt to pursue them without supervision in their own homes.

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In a manual of Hindu exercises which has a considerable sale in this country some of the movements lay what might prove to be an excessive strain on the joints of the pelvis and lumbosacral region of untrained people at and past middle life. On the whole the exercises - muscular and respiratory - are excellent but like similar enthusiastically conceived schemes of physical salvation they contain postures and exercises likely to be injurious to the too eager convert.

Well conceived exercises for those past 40, carefully

supervised and gradually increased in scope and severity, can do nothing but good in those who have had a preliminary examination from their own doctor. The general public is too prone to argue that because exercise is good, all exercises are good! Later it will be argued that simple exercises, or games which keep the lower part of the spinal column and pelvis in a state of free mobility approximating to the lissomeness of youth constitute one of the surest preventatives of backache and acute lumbago. The stiffness of advancing years is only partly physiological and can by suitable means be kept at bay for a long time.

Motoring strains. Two types of strain, producing low backache are commonly met with. They may occur together. The first, owing to the increasing wisdom of motor car designers, is becoming less common. It is due to the back of the driving seat receding too much in its lower part and failing to support the lumbar concavity adequately. A small cushion slung from the back of the seat and supporting the lumbar curve nullifies this fault and eliminates the backache. This strain is, of course, a variety of flat-back strain. In other cars, usually low in the body and designated "sporting", the driver sits on a low seat with his legs straight out in front of him in what is termed the "long-sitting" position. A constant strain is placed on the sacro-iliac joints. If combined, as it often is, with some flat-back strain low backache is still more readily produced.

Nursing faults. After operations, in the puerperium, and during prolonged illness it is essential to avoid placing the patient in the "long-sitting" position in bed, i.e. with the back vertical and the knees straight. It is a common source of sacro-iliac strain and backache. It is a particularly insidious form of strain as it is occurring at a time when muscular tone is poor and ligamentous and joint tissues readily stretched. It is readily prevented by supporting the knees and by the use of a small lumbar pillow.

Postural defects predisposing to the occurrence of backache and attacks of lumbago.

A large and varied group of conditions is now discussed which tend to produce low backache. These conditions when present singly or associated with other factors do not usually produce backache; the human body being admirably adapted to withstand, in the majority of cases, repeated insults. All these forms of postural backache and backache due to various simple strains are most important from the point of view of prophylaxis. For the most part they produce chronic backache of a non-acute nature (i.e. outside the scope of this paper) but they often form part of the aetiological background in a case of acute lumbago. They must always be considered in the treatment of the acute attack,

especially in preventing future attacks of backache. In this respect these factors are often of more importance than many of those which have bulked so large in the ideas of the past, viz. focal sepsis, intestinal auto-intoxication.

(i) Lordosis strain. (a) The commonest type met with is associated with obesity and a general visceroptosis, leading to a gradual stretching of the abdominal muscles. These muscles may be regarded as the "anterior muscles of the spinal column" and when they give way lordosis develops as a 'compensatory' movement directed towards keeping the centre of gravity of the body as a readily controlled perpendicular level, i.e. in this case bringing it backwards.

(b) Many cases of lordosis are secondary to congenital or acquired skeletal abnormalities :- malunion of fractured lumbar vertebrae (e.g. or as the result of a previous Pott's disease in the lumbar vertebrae). It has been stated that some abnormality of the last lumbar vertebra, or of the lumbo-sacral articulation is present in one out of seven persons. Two of these abnormalities which are receiving an increasing amount of attention are sacralisation of the 5th. lumbar vertebra, and lumbarisation of the 1st. sacral vertebra. A certain proportion of these cases are associated with lordosis.



Lordosis due to metastatic carcinomatosis in vertebrae and acute osteomyelitis and other acute inflammatory conditions producing collapse of vertebrae are not likely to be considered apart from their primary effects.

In the past, owing to a faulty conception of the ideal marching and walking attitude, instructors made their pupils adopt an exaggerated soldierly attitude with outstuck prominent chest and increase of the normal lumbar curve. This gait is sometimes met with to-day.

(ii) Flat back strain. These cases present a flattening of the normal lumbar curve: a kind of "reversed lordosis" which may be absolute or relative (i.e. a lessening for some reason of a previously unduly marked lumbar curve). Mennell has indicated some of the ways in which this condition may arise:-

- (a) It may develop on the operating table as the result of the lumbar curve being unsupported during the course of a long operation. This is important in highly strung women of asthenic build.
- (b) Secondary to or associated with a short tendo Achillis on each side.
- (c) Mild cases may be due to the adoption of low heeled shoes by a patient who has habitually worn high heels.



(iii) Tilted pelvis is due to inequality in the length of the lower limbs which may be due to an old trauma or be congenital. It naturally leads to an unequal strain being laid on the joints of the lower part of the back and if present is a factor in the production of backache.

(iv) Defects of the feet. Flat foot entails a loss of some at least of the normal "spring of the feet", i.e. in some of their shock-absorbing qualities. When this is absent the joints of the back are constantly receiving minute jars which in some cases are responsible for the development of a chronic low backache. Occasionally such trivial conditions as plantar warts, or minor injuries to the feet may result in some alteration in the carriage and gait and the change in weight distribution may cause a backache, usually slight and transient but occasionally of importance in that the patient (often a child) may complain of the backache only.

(v) Insufficiency of the Ilio-tibial band. American workers have drawn attention to the significance of changes in this structure influencing the sacro-iliac joints and the lower lumbar joints. The band may become infiltrated by fibrositic deposits and lose its normal elasticity. Indirectly, the sacro-iliac joint on the same or opposite side may be affected in time, the shortened fibrous band inducing a primarily protective lumbar scoliosis.



## CHAPTER 5.

TREATMENT.I. Conservative treatment of acute lumbar fibrositis and acute lumbagos.

It is proposed under the above heading to discuss briefly the treatments suitable for a case which is to be rested in bed, without recourse to manipulative or other measures of a very active character.

Relief of pain. From the patient's viewpoint this is the most important phase of treatment: in short sharp attacks it may be the only one the doctor has time to apply.

(a) Heat in some form is an essential, whether it be applied by the humble but useful hot-water bottle or, at the other end of the scale, by the portable diathermy or one of the short-wave apparatuses. Innumerable are the appliances manufactured for the relief of 'rheumatic' and fibrositic ailments. Only the simplest and most easily applicable will be considered. Any one of the simple portable radiant heat or infra-red lamps provides an admirable source of heat and if left in the patient's house is readily manipulated by an intelligent adult. In general exposures of the affected areas are made at a distance of two feet, for times from 15 minutes to up to an hour (long exposures are usually at a greater distance than two feet), but these details depend on the instrument used and the patient's susceptibility to heat. Short exposures

may be given three times daily.

A useful and easily applied source of heat is the ordinary portable electric radiator. If the patient lie on his side near the edge of the bed the radiator can be placed on a chair or pile of books at such a height and inclination as to radiate heat straight on to the painful back. Gas radiators may be similarly used. If available, an electric heating pad (of which the Q-pad is an expensive but useful variety) can be used to lie or cover the back in between periods of more active treatment. If kept at a minimum heat they may safely be left in position for hours at a time.

Methods of applying Moist Heat. Moist heat applications are more useful in the chronic forms of fibrositis, but occasionally may be tried in an acute lumbago if dry heat appears to be ineffective. "Antiphlogistine", Fuller's earth, bread, linseed or starch poultices may sometimes be useful. Hot mud or peat packs prepared from dried cubes from Pistany and elsewhere are available. Paraffin wax may, if available, be painted over the back in six separate layers (at temperatures from 120°F. to 180°F.) and left on until easy separation of the wax is possible.

Vapour baths or vapour cabinets in ordinary bathrooms are again a source of moist heat, useful in an occasional acute case if readily accessible. It is, however, seldom in an acute case in general practice that any of these forms of moist heat are

considered worth a trial. If the patient is able to get out of bed without great pain at the commencement of an attack the traditional hot mustard bath is excellent. In such mild cases hot brine baths or Epsom salt baths (2lbs, of ~~each~~<sup>either</sup> added to a 40-gallon hot bath) may be ordered in the evenings. The bath should be as hot as can be borne, but immersion should never be more than for 10 minutes at a time.

"Transcutan" baths are an even better agent for employing in an obstinate case, but must be used with care in view of the excessive diaphoresis they sometimes produce.

(b) Analgesic drugs.

Acetylsalicylic acid (aspirin) is the most useful single medicament in this and all other forms of acute fibrositis. Ten grains repeated three or four times daily is an adequate analgesic for most pains of moderate severity. When a greater effect is desired - as is commonly the case - it is usual to prescribe aspirin in combination with such drugs as phenacetin and caffeine, pyramidon, phenazone, Dover's powder, or codein phosphate.

A powder containing Aspirin, grs. 6, Phenacetin, grs.  $2\frac{1}{2}$ , Pulv. Ipecac. Co., grs. 2, one or two as often as required, is an admirable preparation for those not sensitive to Dover's powder. Every doctor has his own favourite combination or proprietary tablet. The

number of proprietary preparations useful in acute fibrositis is legion: the following is a brief list: Novalgin, Cibalgin, Empirin, Empirin with Codein (B.W. & Co.), Veganin, Alasil, the various acetylsalicylic acid preparations; Compral, Gardan, Pyramidon, etc.

The combination of gr. 1/6 codein phosphate with one or two of the simpler analgesics is of proven value.

(c) Massage. In the acute phases of fibrositis massage is seldom indicated, though once severe pain has subsided it is all important in eliminating nodules and chronic fibrositic thickenings. In mild initial attacks of the simple lumbagos vigorous massage - if available - may often produce dramatic results; especially in conjunction with some form of heat treatment.

(a) Homely or traditional methods of treating 'acute lumbago' require brief consideration because they throw some light on present-day principles of treatment.

"Heroic" remedies. Most doctors will have heard of sufferers from acute lumbago who for some urgent reason (e.g. in war time) have had to remain on horse-back and who, after enduring agonies of pain for some short period of time have suddenly found themselves miraculously freed from all discomfort. The two 'curative' factors are, one presumes, the enforced stretching, joggling, and moving (active and passive) of the lumbo-sacral and gluteal muscles and overlying fasciae, and (secondly) the enforced sweating and general bodily stimulation. Variants of this "hell on horseback"

story are met with, the common feature of them being that the lumbago appears to have been veritably "shaken out" of the sufferer. It is commonly known that if an attack of lumbago is felt to be coming on it may be aborted if prolonged physical exercise is undertaken. It is not necessary for such exercise to produce perspiration although it commonly does so. It will be agreed later that the manipulations considered suitable for some common types of lumbago derive their *raison d'être* from the same factors which make the above heroic remedies successful. These considerations led some observers to suggest that incipient or mild lumbago could be benefited by suitable back bending exercises. These are discussed under the heading of manipulation.

The application of heat. It has long been known that a hot bath relieves lumbago and that heat in any form is beneficial. The various types of baths have already been described. Ironing the back over brown paper with a hot iron is an ancient remedy reputed to be of signal efficacy in those brave enough to allow it. This treatment produces local hyperaemia, liberates "a histamine-like substance" in the tissues (when the heat is sufficient) and probably - through a simple axon reflex - produces hyperaemia of the underlying muscles : all useful effects.

Another remedy in every text-book is to fill a biscuit tin with fine sand, bake the tin and its contents in an oven, and then through a small hole pour the hot sand on to the back. This is



simply a method of applying heat, and an excellent one in that the sand retains heat for a lengthy period.

Many peculiar types of poultice have been used in the past - all methods of applying moist heat for as long a time as possible.

Moist heat is often more useful in easing lumbar pain than dry heat.

Counter-irritation. Blistering and the use of the actual cautery are ancient remedies not likely to be well received to-day, although they have their milder counterparts in the erythema dose of the ultra-violet lamp, and in the treatment by acupuncture. The mustard leaf or plaster is the most useful form of counter-irritation met with to-day.

Diaphoresis. The encouragement of free perspiration by baths, by vigorous exercise, by heat, vigorous rubbing, by drinking hot fluids or alcohol and other means has always been recognised as useful.

Purgation. Free purgation was once an essential of treatment, and to-day we still believe in the "initial purge" with calomel at night followed by salts in the morning.

Conclusion. Can we learn anything from considering old-time remedies? The more useful treatments seem to have had the following distinctive characteristics: (1) heat applied to the back was maintained for as long as possible and at as high a

temperature as possible. Two things strike the modern observer (a) that usually a high temperature often producing blistering and burning was used and (b) that the vigour of these treatments was usually matched by an equally dramatic psychological element. (2) Many of these "treatments" greatly increase - actively and passively - the local circulation in the back, and thereby diminish local stasis. Present day treatment has the same aims, but attempts to achieve them by less violent means. We should realise, however, that very often our treatment may be too restrained and that more vigorous measures are necessary. This need for active treatment appears to be the chief lesson consideration of homely remedies teaches us, and perhaps also they add to the weight of the arguments for reasonable manipulative treatment in properly selected cases.

#### Conservative Treatment.

##### (b) Prophylaxis.

This paper deals only with the consideration of acute attacks of lumbago, but the prevention of future attacks of fibrositis also comes under consideration.

Possible aetiological factors - already discussed - must be sought for and remedied if present. In patients under 40 focal sepsis is often the chief causative factor; after this age it is of diminishing importance. In middle age, endocrine,

metabolic, and constitutional factors occupy the centre of the picture. Obesity, whether purely alimentary or due wholly or in part to endocrine changes requires adequate treatment, dietetic, physical, glandular, etc.

Fibrositis readily develops in fatty tissues. The postural changes (e.g. lordosis) following obesity predispose to lumbar fibrositis and will themselves require physical treatment at the same time as dietetic and local treatment is being carried out. Special dietetic restrictions are required in gouty fibrositis and where proved dietetic idiosyncrasy is present.

Occupational and individual factors influencing posture and predisposing to joint strains and/or lumbar fibrositis are dealt with in a special chapter and are of the utmost importance in treatment.

It is seldom that lumbar fibrositis can be considered as simply a local back problem: practically always it is associated with systemic processes, or related to injury or postural abnormality.

## II. Clinical histories of cases of acute lumbago treated by manipulation.

### A. Cases of "diffuse fibrositic lumbago".

The cases described were all treated by manipulative measures and in all of them a dramatic and immediate improvement from pain and stiffness was produced.

In 1933, Philip Wiles suggested that the manipulation of acute lumbago was a treatment of great value and one that shortened the time of disability considerably.

The following cases illustrate the different types of lumbago benefiting from manipulation.

#### Case.1. Mr.W.K., aet.59. Business man.

Had been confined to bed for two days with a typical acute lumbago of the diffuse fibrositic type. The patient was unable to move in bed without severe pain. He kept as quiet as he could and any attempt to flex the spine or to turn in bed immediately produced a sharp pain across the lower part of the back. Lying quite still he experienced no pain. Any active movement of the sacro-spinalis group of muscles, or any passive movement producing tension in this area produced the typical pain of simple lumbago. On palpation no localised fibrositic nodules or tender areas were present. No tenderness was present below the line of the iliac crests. Examination excluded lesions in the lumbo-sacral, sacro-

iliac, and hip joints and there was no evidence of neuritis or trauma to muscle or bone. Referred pain due to organic disease elsewhere was not present. There was no pyrexia.

He was given  $\frac{1}{2}$  grain morphia and manipulated three quarters of an hour later. A perfect result was obtained. He stood up and proudly touched his toes, saying with great satisfaction "I haven't done that for years". He put on his clothes and went out for a brisk walk accompanied by his housekeeper. He went back to business next morning and has not had any lumbago since (3 years). He feels greatly benefited by the manipulation.

Commentary. The excellent results produced by manipulation in this case suggest that in addition to the acute fibrositic process, there were present older "limiting adhesions between muscles, fasciae, and vertebrae" which the passive movements broke down to allow of freer movements of the spinal column.

These chronic processes may be considered to be the usual penalty increasing age exacts if exercises or games involving free spinal movement are given up too soon. Such additional factors as corpulency, with or without lordosis, will naturally tend to limit still further spinal movements. The now general appreciation of the value of continuing appropriate exercise and games into old age will lessen the future incidence of the "stiffness of age". Some stiffness is physiological in the sixties and seventies,



but its too ready acceptance should always be derided.

Case 2. Mr.B.W., aet.25. Bank clerk.

Acute lumbago of moderate severity, of diffuse fibrositic type, developed after a game of tennis. Walked into surgery with bent back, supporting himself by a walking stick. Manipulated in usual manner after  $\frac{1}{2}$ grain morphia. Walked away briskly, only the very slightest stiffness remaining. Returned in 5 minutes for his walking stick which he had forgotten. A negligible degree of stiffness was present the following day and this quickly disappeared.

Case 3. Mr.J.C. aet.25. Commercial traveller.

Acute lumbago of moderate severity: able to get about the house but not able to work. Lumbago developed after getting wet. A case of the diffuse fibrositic type. Manipulated in surgery  $\frac{1}{2}$ hour after giving  $\frac{1}{2}$ grain morphia. Excellent result. On telephoning his house next morning to enquire as to his condition found that he had gone out to play golf!

Case 4. Mr.A.S. aet.29. Commercial traveller.

Confined to bed with moderately severe lumbago of diffuse type. Manipulated 1 hour after giving  $\frac{1}{3}$ grain morphia. After he had dressed he went out for a brisk walk. Went to work next day.

Case 5. Miss S. aet.40. Housekeeper.

When seen was hobbling painfully about the house.

Examination showed no fibrositic nodes. Lumbago had been present two days and was becoming worse. Manipulation was performed in the usual way after  $\frac{1}{2}$  grain morphia and 1/100 atropine. The lumbago completely disappeared, but the morphia and manipulation made the patient very sick two hours afterwards. On the following day patient was completely free from backache.

Case 6. Mr.W. aet.45. Commercial traveller.

A large muscular man weighing 16 stone, who had been a noteworthy athlete in his younger days. For two years he had complained of slight but troublesome lumbar backache, which was commonly aggravated by long motor runs. His condition was never a disabling one, but caused him a lot of annoyance. On his own account he had had exercises, baths, some massage and had dieted himself in an unsuccessful endeavour to lose weight - but all to no effect. Nor had an alteration to the seat of his car had any beneficial effect. When seen in the surgery during an exacerbation of his trouble - worse than any hitherto - and accompanied by marked stiffness and backache he presented the negative signs of the concept "diffuse fibrositis", i.e. no nodules or localised pain on palpation and no evidence of the more serious causes of pain. He had a large and protuberant abdomen and

a definite degree of lordosis. As his condition was not acutely painful he was manipulated without any sedative and his back ache disappeared immediately and has not returned (2 years). After manipulation he was able to flex and extend his back freely - something he had not been able to do for years. Like many sufferers from lumbago this man had led a very active sports career at one time (principally running and boxing) but now took no exercise save incidental walking. He had grown fat and developed a moderate lordosis. This change from active exercise to no exercise at all is still quite frequently met with in cases of lumbago. Resembling case 1, an acute lumbago was superimposed on a chronic process due to increasing lack of movement, obesity and lordosis and probably accompanied by adhesions in the deeper tissues limiting muscular and spinal movement.

Case 7. Mr.N. aet.58. Manager.

Severe case of diffuse lumbar fibrositis. Limited manipulations without sedative. Perfect result. All pain and stiffness disappeared in a few hours after manipulation. Went to work next day.

Case 8. Mrs.M. aet.53.

For two years this patient had suffered intermittently from lumbago, stiff necks (of the occipital neuralgic type due to fibrositic deposits) and painful joints. The principal aetiological

factor was a chronic tonsillar infection. During one of her attacks of lumbago which were always of a subacute nature (with no palpable nodules or localised pain) I manipulated the back, omitting the more severe manipulations (the "joggling of the spine" and the full limit of the other manipulations) after the subcutaneous administration of morphia  $\frac{1}{2}$  grain. From that day this patient has had no more lumbar pain although she is still suffering from painful necks, shoulders and arthralgias. These latter conditions will be improved when tonsillectomy is performed and followed by adjuvant physical and therapeutic treatments.

Case 9. Major M. aet. 46. Lawyer. CASE OF ACUTE TRAUMATIC LUMBAGO

History. Whilst pushing open a gate fell head over heels from his horse. Felt slight soreness in right loin. Several hours after became very stiff and developed severe right-sided "lumbago". When seen for the first time six days later movements of bending and rising were executed with difficulty and marked pain. It was impossible to get him to lie on a bed.

Over one localised small area on the right side two inches from the 3rd. lumbar spine was an area acutely tender to gentle pressure. Over this same place bruising came out three days later.

Major M. is 6ft. 2ins., 15 stone in weight.

After subcutaneous injection of  $1\frac{3}{4}$  ampoules Dilaudid he was manipulated. Before starting the manipulations I made him do

a series of exercises - flexing and extending the spine and laterally flexing the body. After the manipulation he was able to touch his toes freely and three-quarters of the stiffness and pain had gone. He received  $\frac{3}{4}$  hour massage on the two following days and by the third day was practically all right again and able to go about his work without discomfort.

Commentary. A localised strain of the erector spinae muscle was present with rupture of some of the deeper fibres producing a one-sided lumbago. Manipulation eased the condition by dispersing the localised traumatic effusion.

Such cases would probably do better if 1% or 2% novocain was injected into the painful area before carrying out the usual manipulations.

This type of case has been arbitrarily labelled Traumatic Lumbago. If improperly treated it is often the cause of a "chronic lumbar back strain".

Case 10. Mr.A. aet.42. Insurance Manager. ACUTE TRAUMATIC LUMBAGO.

History. On alighting from a tram slightly jarred his back. Felt no pain at the time. Pain came on half an hour later. On the following day the pain was much worse and the back stiff. Pain was only felt on the left side and the patient accurately indicated the small painful area, which was just above the iliac crest about 3 $\frac{1}{2}$  inches from the midline of the back.



Patient remained in bed for two days. He was then manipulated with marked benefit. The complete manipulations were not carried out, but those done produced an immediate easing of the pain and stiffness.

The residual slight backache gradually disappeared during the next week.

Commentary. A case resembling Case 9. A one-sided traumatic case in which manipulation produced marked benefit. Like Case 9, I consider that cases like these should have from 5 - 20 c.c. of 1% novocain injected into and around the intensely painful traumatised area before manipulation is carried out. These cases may require to have daily massage after the manipulation to clear up any residual pain and stiffness, and further supplementary measures such as diathermy, radiant heat or infra-red therapy may of course be given.

### III. Description of Manipulation.

Dilaudid (Knoll) 0.002 gm. to 0.003 gm. is given subcutaneously. (Dilaudid ampoules of 1 c.c. contain 0.002 gm. Dilaudid). About one hour later the patient is manipulated. This is always done on the floor: a folded rug and pillow supporting the supine patient. The rug should be folded in such a manner that it is not more than two feet broad, i.e. so that the doctor can comfortably stand astride and over the patient.

I. The first movements carried out are those of flexion at the hip joint with the knee bent, the patient lying on his back on the rug. These movements are carried out about 7 or 8 times, each movement of flexion being carried further forward than the last; the last movement in the majority of cases brings the front of the thigh fully on to the abdomen. In the majority of cases of lumbago these movements are quite free and their purpose is really a psychological one, namely, to reassure the patient and show him that nothing very dreadful is going to happen. In most cases these movements only take a very short time to perform. When the movements on one side have been done I usually abduct the thigh and circumduct the knee thus mobilising the hip joint freely.

The same movements are repeated on the other side. Then both thighs are flexed together on the abdomen. This may be repeated once or twice.

II. The patient sitting up, the doctor takes up a kneeling position immediately behind him and places one hand on each shoulder. He then - gently at first - begins to rock the patient forwards and backwards, each time pushing the shoulders a little further downwards. In the majority of cases of lumbago considerable resistance is offered to this movement. It is gradually overcome and eventually the doctor should be able to push the patient's head well down between his knees. As the whole manipulation is divided into two stages, the manipulation need not fully flex the

spine during this first stage.

III. The thighs are now gradually flexed several times in turn with the knee in full extension. These movements have to be done against a resistance which is partly protective. Both thighs are then flexed together. Each movement is carried a little further than the one before.

IV. The manipulator now extends the lumbar spine in a manner I term "joggling". He stands astride the supine patient, places his hands under the lumbar concavity and firmly grasps one wrist with the other hand. (In the case of light patients an interlacing finger grip is adequate.) The patient is then slowly lifted from the ground and instructed to let his body and shoulders sag downwards (this gospel of perfection is rarely carried out fully). The joggling movements are now carried out as follows: the clasped hands having raised the patient to a height of about two feet from the ground are suddenly lowered about six inches and as soon as the patient falls on to the clasped hands he is immediately raised and dropped again, this process being repeated five, six or more times. In a heavy patient it is a manoeuvre that demands considerable strength. As it is a movement that considerably benefits all cases of diffuse fibrositic lumbago it is one that should always be attempted.

After a short pause all the movements are repeated, full mobility being secured.

### Additional Manipulations.

Movements aiming at producing lateral flexion and rotation of the spine in its lower half may, if desired, be added to those already done. The author prefers, however, to make the patient perform these movements himself when the manipulation is over, when he is instructed to touch his toes, to flex the spine laterally, to extend the spine, to rotate the spine, and to "run" briskly on one spot lifting the knees high in the air. Naturally, brisk movements are only demanded from those fit and strong enough to perform them.

The description of these post-manipulative exercises naturally leads to a consideration of the treatment of acute lumbago by means of exercises which, by flexing, extending, laterally flexing, and rotating the spine in its lumbo-sacral region are often extremely useful in getting rid of mild attacks. The author believes that in many mild cases they can do all that manipulative measures succeed in doing. To be effective, however, they should be begun by the patient immediately he feels lumbar stiffness beginning. In the majority of even the mild cases these exercises demand of the patient a degree of stoicism not readily found. As most cases begin suddenly and severely exercises are out of the question unless a preliminary analgesic has been administered. It will be found in practice that few patients will desire to carry out the necessary exercises. They do, however,

form a useful adjunct to manipulative treatment especially when the afflicted person is fat and heavy and the doctor desires to rest for a few minutes at half-time !

After the manipulations have been performed it is useful to make the patient don his clothes and go out for a brisk walk accompanied by some friend or relation. This has an excellent psychological purpose and it has the very useful effect of loosening up the affected muscles and stimulating the circulation through them.

Manipulation. Physiological reasons for its efficacy  
in acute fibrositic lumbago.

Manipulative measures are often essential when the real cause of an apparently simple lumbago is a strain, sub-luxation, displacement or dislocation of a particular joint. What is more difficult to understand is why they should be so strikingly successful in those cases which have been considered due to a diffuse fibrositis (without nodules), to some special cases with nodules, and to a certain group showing signs of rupture of muscle fibres. These are all types of lumbago still usually treated - when severe enough - by rest in bed and conservative measures. It is known: (i) that violent physical exercise involving shaking (e.g. horse riding) often produces a rapid cure, (ii) that prolonged running or back bending exercises can do the same in mild



cases, (iii) that some cases can be "sweated out", (iv) that prolonged deep massage if it can be borne is extremely beneficial in cases treated conservatively, (v) that the rationale of physiotherapy in these conservatively treated cases is the induction of hyperaemia - deep and superficial, (vi) that many of the almost violent methods of applying heat locally (described under homely remedies) are likely to cause a deep hyperaemia as well as a superficial erythema or burn. All treatments aim - consciously or unconsciously - at removing a vascular and tissue fluid stasis from the affected muscles and connective tissues.

A consideration of normal physiology and the little we know of the early pathology of fibrositis leads to the conclusion that the first change in acute fibrositis, myositis or myalgia is the undue persistence of the tissue changes normal during activity. This persistence is due to the reaction of external and internal influences: (i) skin chilling producing reflex capillary narrowing, (ii) the presence in the local circulation of toxins and metabolites - known and unknown, which interfere with the tissue fluid changes from activity to rest.

The preliminary easing of pain produced by the administration of morphia, Dilaudid or other analgesic, has the useful effect of relaxing some, if not all, of the protective muscle spasm which is always present. If at the end of the described manipulations

the patient is free from all pain and stiffness we are forced to assume that a normal physiological condition of muscle and connective tissue has been restored, i.e. that the excess of tissue fluid has been absorbed, that metabolites and toxins are no longer present in excess (locally), and that any gel-like bodies (the precursors of the fibrositic nodules) have been dispersed. Definite fibrositic nodules too may disappear.

\* (a) "The contractions of the skeletal muscles squeeze the veins contained within them, and drive the blood on towards the heart". The passive movements of manipulation have this self-same effect.

(b) The relaxation of protective spasm and the continued muscular movements produce an increased blood flow both to and from the affected tissues, an increased oxygenation and removal of metabolites. One presumes that all the beneficial changes produced by massage are produced rapidly instead of slowly and gradually.

(c) The stretching and direct pressure on the tissues disperses gel-like bodies and tends to eliminate nodules.

\* "Applied Physiology", Samsen Wright, p.809, 5th.edition.

(d) Where the acute attack is an exacerbation of chronic processes any limiting adhesions between muscles, fasciae, and vertebrae are broken down.

(e) If any small area of ruptured fibres and traumatic exudate or haematoma is present, this exudate is dispersed.

(f) A full mobility of all the joints of the lower part of the vertebral column and of the pelvis is secured. This is another factor increasing vascular and lymphatic flow.

#### IV. Treatment of Sacro-iliac Strain.

Sacro-iliac strain is now generally recognised to be a fairly common condition; one writer <sup>\*</sup>indeed goes so far as to say:-

"the most frequent cause of sciatica is sacro-iliac strain".

Another authority <sup>x</sup>says that "sacro-iliac subluxation is a diagnosis often made to account for low backache. Whether the sacro-iliac joint ever does subluxate is doubtful; but there is no doubt that many patients labelled with this diagnosis are cured by manipulation." The rôle of manipulative treatment may be summarised by saying that one group admits the value of free

Manipulation of Difficult Joints. George Perkins. B.M.J. 17/12/38, p.1270.

"Sacro-Iliac Strain". A.Lawrence Abel. B.M.J., 1/4/39, pp.683-686.

manipulative measures for the treatment of suitable cases of "low-back pain"; another admits the reality of sacro-iliac strain and freely mobilises the sacro-iliac joint with the identical technique for every case. Mennell and his disciples endeavour to make an exact diagnosis of the type of strain and use manipulations considered specially suited for each type.

Manipulation, followed by adequate support to the back, is now generally considered to be the treatment of choice where no contra-indications are present: a far cry from the not so distant 20's when sacro-iliac strain was the happy hunting ground of the knowledgeable quack and when the medical profession disbelieved in its existence. It is not proposed to describe here the various types of manipulation or any other details of treatment. A personal view is, however, expressed of the principles which should underlie the treatment of these cases in general practice.

1. Doubtful cases of mild severity with little or no evidence of subluxation or displacement and no sciatic pain, should be treated on conservative lines. Clinically they may present the appearance of a mild lumbago with a tendency to one-sided physical signs and a history of an injury throwing strain on a sacro-iliac joint.

2. All cases showing clear-cut signs of forward or backward torsion strain should be manipulated (under anaesthesia if necessary)

and provided with an efficient support afterwards. These are the acute cases.

3. Recurrent "low-backaches", "lumbagos" or "sciaticas" whose history and examination strongly suggest a sacro-iliac injury or strain and where no contra-indicative factors are present should also be manipulated.

4. Many long-standing cases of sacro-iliac strain, where both forward and backward torsion strain are present, and the joint is obviously in an unstable condition should not be manipulated.

5. Operative treatment (joint fixation) should be restricted to cases of purely "mechanical" abnormality not responding to any other treatment.

The presence of widespread fibrositis, a long history of "rheumatic" conditions, or the probability of the backache being partly psychological are very strong reasons against quick recourse to surgery even when there is little doubt that the sacro-iliac joint is strained.



## VI. Conclusion.

What conclusions may reasonably be drawn from this limited consideration of acute lumbago ?

As in all other aspects of medicine accurate diagnosis is essential. The possibility of sacro-iliac injury should always be remembered as it is much commoner than is usually supposed, even in cases closely resembling simple fibrositic lumbago. Fibrositis frequently follows improperly treated sacro-iliac strain or injury and often accompanies it, so its presence is in no way to be regarded as a conclusive diagnosis. Indeed a diagnosis of fibrositis in this area should only be arrived at when all other causes of acute low back pain have been excluded.

Attention is drawn to the great value of manipulative treatment in certain types of fibrositic lumbago, in cases where muscle injury is present, and in cases termed diffuse fibrositic lumbago (where a pre-fibrositic condition is postulated). For convenience of treatment cases formerly termed acute myalgia are included in this latter group.

An attempt is made to explain the rationale of manipulative treatment which is considered - in cases suitable for its use - to produce the same therapeutic effects as skilled massage, and the various forms of heat application, but in a more rapid and dramatic manner.

The usual aetiological factors must be sought and eliminated if present. For the adequate treatment of present and the prevention of future attacks great emphasis is laid on what have been termed postural defects and on other factors having unfavourable effects in the dynamics of the skeleton. Such matters as dietary faults and unsuitable and dangerous systems of exercises come under review.